



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/585,382

12/04/2007

Timothy G. Geiser

5275

2864

22896 7590 01/08/2010
LIFE TECHNOLOGIES CORPORATION
C/O INTELLEVATE
P.O. BOX 52050
MINNEAPOLIS, MN 55402

EXAMINER

HOBBS, MICHAEL L

ART UNIT

PAPER NUMBER

1797

MAIL DATE

DELIVERY MODE

01/08/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/585,382	Applicant(s) GEISER ET AL.	
	Examiner MICHAEL HOBBS	Art Unit 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 November 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) 16-35 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 July 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>09/25/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group I claims 1-15 in the reply filed on 11/24/2009 is acknowledged.
2. Claims 16-35 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 11/24/2009.
3. Claims 1-15 are pending further examination upon the merits.

Information Disclosure Statement

4. The information disclosure statement (IDS) submitted on 09/25/2009 has been considered by the examiner.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-8 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Woudenberg et al. (US 6,126,899).
7. For claim 1, Woudenberg discloses the following limitations:

Art Unit: 1797

"a substrate and an optically transparent cover": the reference discloses a substrate (substrate 32) and a transparent window or cover where this window is formed of various layers composed of either silica-based glasses, quartz, polycarbonate or an optically transparent plastic layer (col. 5 lines 44-46; col. 11 lines 14-18).

Regarding the structural limitations of the substrate:

"a first surface": The substrate disclosed by Woudenberg includes a first surface as shown in Figure 1B.

"at least one sample receiving chamber": The applied reference includes a sample inlet (inlet 38a) or sample receiving chamber (col. 6 line 6).

"at least one distributor channel in fluid communication with the [...] sample receiving chamber": A distribution network (network 34a) or channel(s) are disclosed by the reference (col. 6 lines 5-6).

"at least one reaction chamber": There are a plurality of detection or reaction chambers (chamber 44a) that branch off the distribution channel (col. 6 lines 6-7) and with regards to the chambers comprising a *"a recess in the first surface"*, the chambers are present within the substrate and are being interpreted as forming a "recess" within the substrate.

"at least one inflow channel": With regards to the inflow channel, the section of the single flow channel (channel 46a) between the inlet (inlet 38) and the first of the detection chambers (chambers 44a) as shown in Figure 1 is being interpreted as the inflow channel of the instant application.

Art Unit: 1797

“at least one vent”: Woudenberg discloses a vacuum port (port 40) is in fluid communication with the detection chambers (Fig. 1a) and is fully capable of functioning as a vent. In the alternative, the port can be connected to a three-way valve in order to expose the network to either a vacuum source and a vent (col. 9 lines 45-48).

The optical layers above the detection chambers, as was discussed above, are fully capable of sealing the substrate and as the substrate are made from a material with a high heat or thermal conductivity such as silicon or a heat-conducting metal (col. 11 lines 26-29) and have the inherent property of having a thermal conductivity greater than 0.25 W/m°K.

8. With regards to claim 2, the channels of Woudenberg are fully capable of enabling the sample to be transported through the chamber by capillary action.

9. With regards to claims 3-6, the substrate of Woudenberg has the inherent property of having a thermal conductivity about or greater than 0.5 W/m°K, 1.0 W/m°K, 2.0 W/m°K and 5.0 W/m°K.

10. For claim 7, Woudenberg discloses a plurality of detection or reaction chambers (chambers 44a) as shown in Figure 1a.

11. For claim 8, Woudenberg discloses that the opacity or transparency of the substrate material defining the detection chambers will generally have an effect on the permissible detection geometries used for signal detection (col. 11 lines 39-41). To address this issue, Woudenberg uses an optically opaque lower wall and sides of the detection chamber (col. 11 lines 48-49) where this opaque material exhibits low

Art Unit: 1797

reflectance in order to minimize the amount of light reflected back to the detector (col. 11 lines 54-56).

12. For claim 13, the substrate material has the inherent property of having a *"softening temperature, or a glass transition temperature of greater than about 115°C"*.

13. Therefore, Woudenberg meets the limitations of claims 1-8 and 13.

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

16. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

Art Unit: 1797

not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

17. Claims 9-11 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Woudenberg et al. (US 6,126,899) in view of Gong et al. (US 2003/0138941 A1).

18. For claim 9 and 10, Woudenberg discloses a substrate made of silicon or polycarbonate (col. 10 lines 60-66) and discloses where the material selected facilitates rapid heating and cooling of the device (col. 10 line 54 – col. 11 line 1). Finally the substrate can be made from a plurality of materials (col. 11 lines 2-3), but differs from the instant claims 9-11 where the second material is a thermally conductive filler such as metal particles, graphite or talc.

19. Gong discloses a sample preparation chip that includes loading ports and reaction chambers on a substrate where the substrate is made from materials such as glass or PDMS. For claims 9-11, the substrate incorporates a metallic powder filling or metal particles ([0082]) where this powder filling provides the advantage of improved heat conduction within the substrate ([0082]) and demonstrates that the use of a thermally conductive filler within a substrate was an art recognized method for improving the heat conduction within a chip. Therefore, it would have been obvious for one of ordinary skill in the art to employ the filler suggested by Gong within the substrate of Woudenberg with a reasonable expectation of success. The suggestion for doing so at the time would have been in order to improve the conduction of heat through the substrate when the substrate is composed of a material such as plastic ([0082]).

Art Unit: 1797

20. With regards to claim 14, Woudenberg discloses an outlet that can serve as a vent and is connected to the detection chambers by a channel (in fluid communication) as was discussed for claim 1. Woudenberg differs from the instant claim in that a plurality of vents is not explicitly disclosed by the reference. However, the use of a plurality of vents is merely duplication of parts that would be obvious for one of ordinary skill in the art to include within Woudenberg in order to obtain the predictable result of quickly removing air or gas from all of the reaction chambers. Furthermore, it is noted that duplication of parts (one vent versus a plurality of vents) with no presentation of a new or unexpected result over the prior art has no patentable significance, consult *In re Harza*, 247 F.2d 669, 124 USPQ 378 (CCPA 1960) and MPEP § 2144.04 VI (B).

21. In the alternative, Gong discloses multiple vents (vents 52; [0130]) in the top layer that allow fluid to flow within the various channels. Therefore, it would be obvious for one of ordinary skill in the art to employ the vents suggested by Gong with the substrate of Woudenberg in order to obtain the predictable result of venting gas and air out of the distribution network.

22. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Woudenberg et al. (US 6,126,899) in view of Gong et al. (US 2003/0138941 A1) as applied above and in further view of Pugla et al.(US 2003/0166265 A1).

23. Woudenberg and Gong differ from the instant claim requiring a capillary stop within the channel.

Art Unit: 1797

24. Pugla discloses an apparatus for the precise transfer and manipulation of fluids by either centrifugal or capillary forces that includes for claim 15 a plurality of vent channels (vents V1 and V2) and a capillary stop (stop 5; [0034]). The use of a capillary stop is a conventional means for controlling the fluid flow within micro-fluidic channel. In the case of Pugla, the reference uses capillary stop to control the flow of a sample from an inlet reservoir to the reaction chambers and does not explicitly state that the capillary stop is used in conjunction with a vent. However, the problem within the instant application of minimizing leaks from a vent is a well known problem within the art. This has been solved by using hydrophobic coatings within the vent channel, liquid impermeable membranes, and channels with a reduced cross-sectional area, weirs and micro-valves. Therefore, it would have been obvious for one of ordinary skill in the art to try the capillary stop of Pugla within the vent channel of Woudenberg and Gong in order to achieve the predictable result of preventing leaks from the vent.

25. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Woudenberg et al. (US 6,126,899) in view of Aylward et al. (US 2005/0064154 A1).

26. With regards to the substrate of claim 12, Woudenberg discloses that the substrate can be made of plastics, polymers and copolymers such as polypropylenes, polystyrene, polyimides and polycarbonates (col. 10 lines 62-64), but differs from the instant claim requiring a substrate made of aromatic polyester, aromatic poly (ester-

Art Unit: 1797

amide), an aromatic-aliphatic poly (ester-amide), an aromatic polyazomethines or an aromatic polyester carbonate.

27. Aylward discloses a transparent, invisible conductive grid that includes a flexible substrate. This substrate can be made from a variety of materials such as a cyclic polyolefin or a polyester ([0149]). The preferred polyester is an aromatic polyester such as Arylite ([0149]).

28. The applied reference of Aylward demonstrates that this material was known and art recognized and that the skilled artisan would have been aware of the functions and uses of this substrate at the time of the instant application. Therefore, one of ordinary skill in the art would have found it obvious to substitute the substrate material of Aylward for the substrate material of Woudenberg in order achieve the predictable result of having biologically inert surface for the sample fluid.

Conclusion

29. No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL HOBBS whose telephone number is (571)270-3724. The examiner can normally be reached on Monday-Thursday 7:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Marcheschi can be reached on (571) 272-1374. The fax phone

Art Unit: 1797

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/William H. Beisner/
Primary Examiner, Art Unit 1797

/M. H./
Examiner, Art Unit 1797